

**IN THE CLAIMS:**

1        1. (Original) A method for programming a pattern matching engine having a plu-  
2 rality of information storage entries with one or more regular expressions, each regular  
3 expression including a plurality of characters and having a corresponding action to be  
4 applied to matching strings, the method comprising the steps of:

5              identifying one or more borders within a given regular expression, the one or  
6 more borders separating the given regular expression into a plurality of sub-expressions,  
7 at least one sub-expression having a plurality of sequential characters; and

8              loading one or more entries of the pattern matching engine with a plurality of the  
9 sequential characters from at least one sub-expression, wherein

10             the borders are defined by a predetermined sequence of regular expression  
11 metacharacters.

1        2. (Original) The method of claim 1 wherein the predetermined sequence of regu-  
2 lar expression metacharacters are a wildcard metacharacter followed immediately by a  
3 repeat last character zero, one or more times metacharacter.

1        3. (Original) The method of claim 1 further comprising the step of organizing at  
2 least part of the pattern matching engine into a plurality of sections, and wherein each  
3 section of the pattern matching engine is loaded with a plurality of search patterns for a  
4 corresponding sub-expression.

1        4. (Original) The method of claim 3 wherein the entries of a given section are  
2 loaded with one of a search pattern that includes a complete match of the respective sub-  
3 expression, a search pattern that includes a partial match of the respective sub-expression,  
4 and a mismatch pattern.

1       5. (Original) The method of claim 4 further comprising the steps of:  
2           associating at least one sub-expression with a current state variable; and  
3           loading the associated current state variable into each entry of the section of the  
4       pattern matching engine that contains the at least one sub-expression.

1       6. (Original) The method of claim 5 wherein the pattern matching engine has at  
2       least one content addressable memory (CAM) loaded with the one or more regular ex-  
3       pressions.

1       7. (Original) The method of claim 6 wherein  
2           the CAM is a ternary content addressable memory (TCAM) that supports don't  
3       care values, and  
4           the mismatch pattern includes all don't care values.

1       8. (Currently amended) The method of claim 7 wherein  
2           each regular expression is associated with an action,  
3           the pattern matching engine further includes a second memory device having a  
4       plurality of entries, and  
5           the entries of the second memory device are loaded with the actions associated  
6       with the one or more regular expressions.

1       9. (Original) The method of claim 8 wherein each entry of the TCAM identifies a  
2       corresponding entry of the second memory device.

1       10. (Original) The method of claim 9 wherein at least one TCAM entry is associ-  
2       ated with a next state variable, the method further comprising the step of loading the en-  
3       try of the second memory device that is identified by the at least one TCAM entry with  
4       the associated next state variable.

1        11. (Original) The method of claim 10 wherein  
2            the at least one TCAM entry is located in a TCAM section whose entries are as-  
3            sociated with a current state variable having a first value, and  
4            the next state variable has a second value that differs from the first value, thereby  
5            specifying a new TCAM section to be searched.

1        12. (Original) The method of claim 11 wherein each TCAM entry has a match  
2            cell that contains the complete match, the partial match or the mismatch pattern.

1        Claims 13-20. (Canceled)

1        21. (New) The method of claim 1 wherein  
2            each regular expression is associated with an action,  
3            the pattern matching engine further includes a second memory device having a  
4            plurality of entries, and  
5            the entries of the second memory device are loaded with the actions associated  
6            with the one or more regular expressions.

1        22. (New) The method of claim 21 wherein  
2            the pattern matching engine has at least one ternary content addressable memory  
3            (TCAM) that supports don't care values, the TCAM loaded with the one or more regular  
4            expressions, and  
5            each entry of the TCAM identifies a corresponding entry of the second memory  
6            device.

1        23. (New) The method of claim 22 wherein at least one TCAM entry is associated  
2            with a next state variable, the method further comprising the step of loading the entry of  
3            the second memory device that is identified by the at least one TCAM entry with the as-  
4            sociated next state variable.

- 1        24. (New) The method of claim 23 wherein
- 2              the at least one TCAM entry is located in a TCAM section whose entries are as-
- 3              sociated with a current state variable having a first value, and
- 4              the next state variable has a second value that differs from the first value, thereby
- 5              specifying a new TCAM section to be searched.
  
- 1        25. (New) The method of claim 24 wherein each TCAM entry has a match cell
- 2              that contains the complete match, the partial match or the mismatch pattern.